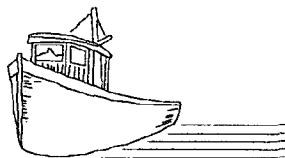
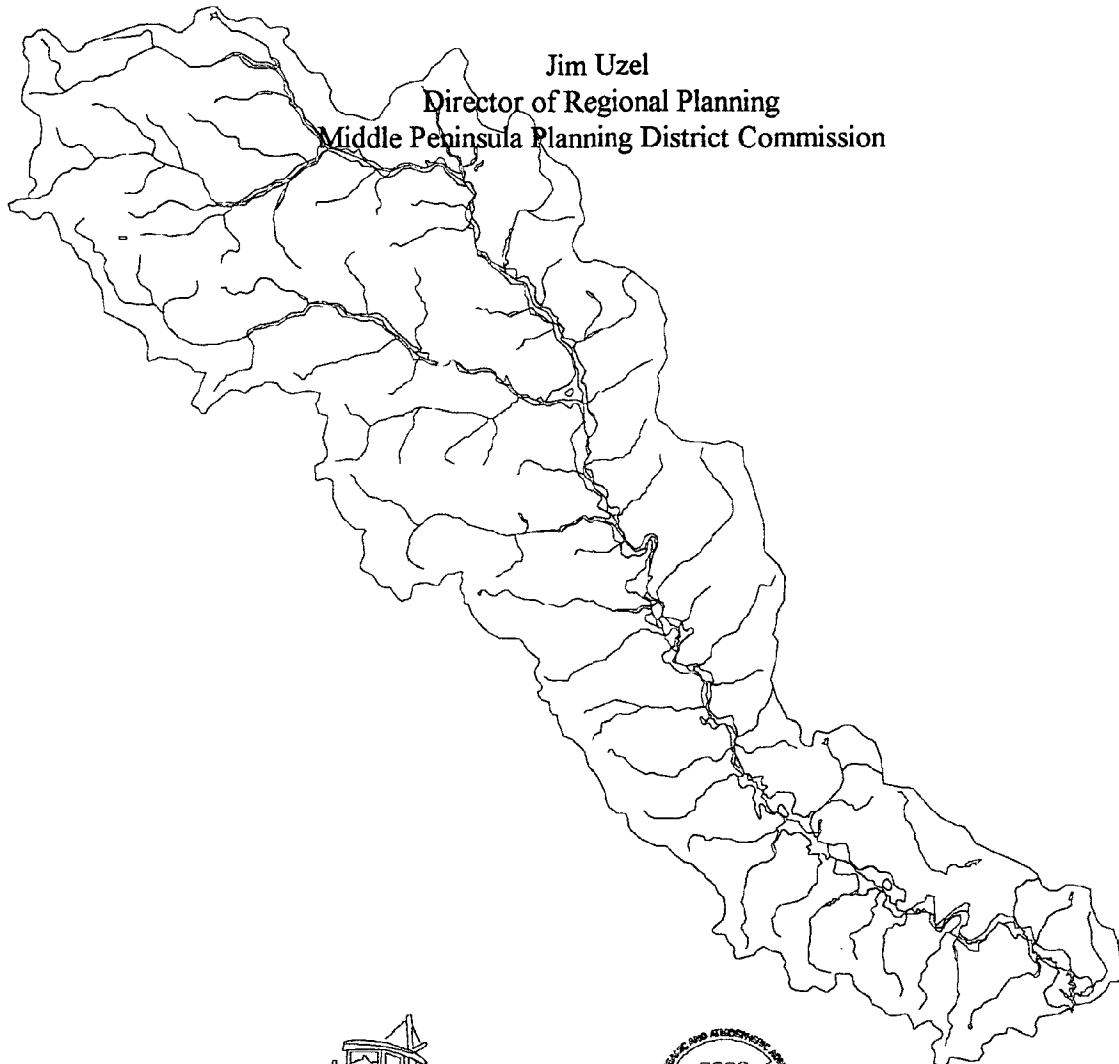

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DRAGON RUN WATERSHED MANAGEMENT PROGRAM

PHASE II, OCTOBER, 1994 - - SEPTEMBER, 1995

FINAL REPORT, INCLUDING LAND USE ANALYSIS REPORT



Prepared by the Middle Peninsula Planning District Commission

This report was funded, in part by the Virginia Coastal Resources Management Program at the Department of Environmental Quality through Grant #NA47OZ0287-01 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, under the Coastal Management Act of 1972, as amended.

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FINAL REPORT, INCLUDING LAND USE ANALYSIS REPORT

Jim Uzel
Director of Regional Planning
Middle Peninsula Planning District Commission

Prepared by the Middle Peninsula Planning District Commission

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TC 409 .D37 1995

Overview

The Dragon Run Management Program is a special area management planning and implementation project designed to protect the natural resources within the ecosystem of the Dragon Run. The watershed of the Dragon Run consists of 153 square miles of area including portions of Essex, Gloucester, King and Queen, and Middlesex Counties. The stream is forty miles in length and is characterized by extensive non-tidal and tidal cypress swamp. The watershed is relatively undeveloped, with the majority of land uses being in agricultural or forestry activities. The unique and extensive swamp ecosystem coupled with the low intensity of development provide for an opportunity to proactively manage the resource to maintain the quality of the Dragon Run region.

This management program has begun the task of preserving the quality of the Dragon Run through activities in the following areas:

1. Dragon Run Steering Committee
2. Public Meetings/Information
3. Dragon Run Access
4. Exceptional Waters Assessment
5. Water Quality Monitoring
6. Handbook of Current Programs

Each of these activities will be detailed in the remainder of this report.

Dragon Run Steering Committee

The Dragon Run Steering Committee (DRSC) has an eleven-year history of interest in protecting the Dragon Run and preserving the traditional uses of the waterbody and land. In 1987 the Steering Committee adopted the Dragon Run Conservation District, modeled after a proposed conservation district in Middlesex County. The Conservation District was subsequently adopted by three of the four counties. In 1989 the DRSC was awarded a citation by the Virginia Citizens Planning Association for its citizen-based planning efforts. The DRSC continues this tradition of being a citizen/landowner-based organization striving to formulate effective and practical strategies to manage their Dragon Run resource.

In 1995 the Dragon Run Steering Committee was comprised of the following members:

Essex County

Bryan Taliaferro
F. L. Garrett, III
Dorothy Miller

Gloucester County

Jimmy Morgan
Elizabeth DeHardit
Buddy Bland

King and Queen County

Russell Williams
Jean Barrow
Donnie Sears, Vice-Chairman

Middlesex County

George Northam, Jr., Chairman
Buddy Moore
Jerry Bray

The DRSC held nine monthly meetings (three months off) in 1995 and addressed a variety of issues.

The Steering Committee provided input on all aspects of the Dragon Run Watershed Management Program. Efforts and accomplishments by staff were presented to the Steering Committee for advice and direction. The following are the major efforts in which the DRSC has been involved:

Future Role of DRSC
Water Quality Monitoring Program
Handbook of Current Programs
By-laws Development

Land Development Issues
Forestry and Agriculture Issues
Water Rights and Uses
Open Space Development
Exceptional Waters

The format of the meetings provided guest speakers the opportunity to address their expertise as related to the Dragon Run. The following speakers presented to the Committee:

Land Development - Nick Hahn - Middlesex Co.

Agriculture - Kilby Majett - Natural Resources Conservation Service

Forestry - Bill Saunders - Va. Dept. of Forestry

Water Rights and Uses - Chip Neikirk - Virginia Marine Resources Commissions

Open Space Development and Exceptional Waters - Jim Uzel

One of the most discussed topics was the mandatory use of Forestry Best Management Practices in the Dragon Run Conservation District. Of particular interest was the timbering of a tract of land in Middlesex near the route 17 bridge. The DRSC visited the site in June. Meetings with Bill Saunders of the Virginia Department of Forestry clarified the DOF position of voluntary BMP implementation. The locality had the sole enforcement mechanism through its zoning ordinance. The Steering Committee noted the need for better coordination and communication between the state and local agencies concerning BMP actions. (See Attachment A)

Public Meetings/Information

One of the most important tasks of the Dragon Run Watershed Management Program is to involve the public in the decision making process at an early stage of plan development. The Dragon Run Steering Committee is the cornerstone of this approach, with landowners and boards of supervisors members. However, it is also important to provide information and opportunity for input to the public at large. In 1995 the effort of public outreach took the form of published and open DRSC meetings, and the water quality monitoring program.

Meeting notices are sent to all local and regional newspapers in advance of each DRSC meeting. The newspapers publish the notices as space permits. The papers include the Tidewater Review, Southside Sentinel, Gazette-Journal, Rappahannock Times, Daily Press, and Richmond Times-Dispatch. DRSC meetings usually attract one to five interested citizens (in addition to DRSC members) who are welcome to participate in the agenda discussion.

The water quality monitoring program was advertised widely and requested interested citizens to become involved (more on this program below).

An additional public information activity will be the published availability of this annual report.

Dragon Run Access

Access to the Dragon Run Stream and lands have long been a topic of discussion and controversy among landowners and recreationists. The Dragon Run Access Plan was adopted by the Middle Peninsula Planning District Commission in July, 1994.

The Access Plan emphasizes management of access activities by landowners and localities. Recognizing the wild and natural environment of the Dragon Run, limited and accountable access is recommended.

The MPPDC worked toward the first implementation of the Dragon Run Access Plan by proposing to manage portion of a site owned by the Friends of Dragon Run (FDR) conservation group. The MPPDC staff and FDR worked together in drafting agreement on terms of lease and an annual maintenance plan. (Attachments B & C). The project was, however tabled by the MPPDC Board and the project was suspended.

Exceptional Waters Assessment

A related project funded under a 604(b) grant through the Department of Environmental Quality, provided basic information on the Dragon Run Watershed. The project assessed the 21 Middle Peninsula Watersheds on criteria developed by the DEQ and on the comprehensive plans of localities.

The Dragon Run Watershed ranked second among the 21 watersheds as possible candidates for Exceptional Waters nomination.

Water Quality Monitoring

In early 1994, local newspapers published a call for volunteer water quality monitors at the request of the Dragon Run Watershed Management Program. Initial response was good, and ultimately eleven citizen monitors and backup monitors were trained under the protocol of the Alliance for the Chesapeake Bay Citizen Monitoring Program. With the assistance of staff from the Alliance for the Chesapeake Bay, six water quality monitoring sites were established. Weekly monitoring began at most sites in April, 1994. After one year, three monitors retired and four new monitors and one back up monitor were recruited and trained. Two new sites were established and two sites were discontinued. The current sites are shown on Attachment D.

The water quality parameters measured at all sites include air and water temperature, dissolved oxygen, ph, secchi depth, and observations.

Handbook of Current Programs

One effort suggested by the DRSC was the formulation of a watershed handbook for use by the Steering Committee, local governments, and citizens which would outline the existing regulations and programs in effect at the local, state, and federal levels. The goal of this effort is to identify means of enforcement of existing requirements and avoid duplicity in future efforts.

The handbook is still under development and will become part of the public awareness program of the project.

Continuing Efforts

The Middle Peninsula Planning District Commission will continue the Dragon Run Watershed Management Program development throughout the coming year. This final year of management plan development will result in a completed plan, with public presentations and review of the document.

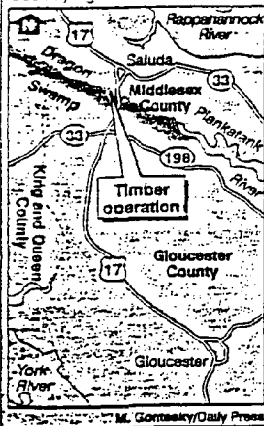
Troubled water



County officials and members of the Dragon Run Steering Committee, concerned by the impact of logging, investigate the area around the swamp. Dito Morisse/Daily Press

Timbering in Dragon Swamp

Local officials and conservationists toured site where timbering operation is destroying wetlands.



Logging at Dragon Run concerns committee

By Mathew Paust
Daily Press

MIDDLESEX

Some environmentalists held their monthly meeting in a swamp last week, just so they could see firsthand how a timbering operation has scarred one of the Middle Peninsula's natural resources — the 30-mile Dragon Run.

Braving bugs, snakes, humidity, mud, poison ivy and the raucous laughter of bullfrogs, a dozen hikers left their rides on dry land in the early evening on June 14 to plunge on foot into the Dragon Run Swamp. Located just off Route 17 on the Middlesex County side, Dragon Run is a swamp-sandwiched stream that mean-

ders along the borders of Essex, King and Queen, Middlesex and Gloucester counties until it flares and becomes the Piankatank River. The group was led by members of the Middle Peninsula Planning District Commission's Dragon Run Steering Committee.

At first the going was relatively easy — on the feet if not the senses — thanks to a swath cut through the 90-acre tract of woods. Recent rains had left parts of the 10-foot-wide clay road covered in water, at least a foot deep in some of the ruts left by the wheels of dinosaur-size logging machinery.

The sight of the devastation caused by heavy logging immediately darkened the mood of

the group, which included Jimmy V. Morgan, a member of the Dragon Run Steering Committee and treasurer of the non-profit Friends of the Dragon Run; Jim Uzel, environmental programs coordinator for the planning district commission; Hoyt Wheeland, watershed coordinator for the Piankatank Watershed Project; and George T. Hayfield, King and Queen County zoning administrator.

"Look at this poor old river birch. It's still trying to live," said Lorna Vass, vice chairwoman of Friends of the Dragon Run, pointing to a tree stub beside the logging road. The river birch, she said, is the only

Please see Dragon/B2

■ Dragon

Continued from B1

birch species on the Eastern Seaboard.

"You can come back 20 years and these ruts will still be there," said Russell Williams, pointing to the deep, water-filled ruts. Williams is a member of the Dragon Run Steering Committee, which coordinates regional planning for conservation of the Dragon.

They gawked at the ruins as they stepped gingerly along bridges formed by trees that fell across streams and pools. And they took time to identify the sparse flora that remained and what was left of trees that had been snipped off by the gargantuan implement known as a "Timber Tiger." The Tiger can roll on pallers through a swamp to pluck its prey with crane-like arms after its sawing teeth sheer the trunk with a swipe.

The machines that had yanked many hardwoods out of this forest were long gone, forced to flee in April after Middlesex County notified the harvester — R.L. Green Logging of Hanover — that it was violating the county's Dragon Run conservation zone ordinance.

Prompted by the planning district commission, several counties adopted Dragon Run conservation zones to protect the swamp, but only Middlesex made it mandatory for loggers in the zone to file a "best management plan" of timber harvesting according to state guidelines, said MPPDC Director Dan Kavanagh.

Even the state can request only voluntary compliance with the management-plan provision, said State Forester Jim Garner.

The state Forestry Department does have some ways to prevent streams from becoming polluted with sediment or debris and can bar



James C. Uzel, environmental programs coordinator for the Middle Peninsula Planning District Commission, is one of those assessing the impact of the logging operation on Dragon Run.

Dito Morales/Daily Press

heavy equipment from the banks of streams. Garner said.

Middlesex County halted Green's timbering at the Dragon Run site in April because Green had not filed a best-management plan and was logging "in a manner inconsistent" with such a plan's requirements.

R. Nicholas Hahn, Middlesex zoning administrator, said the county has asked Green to return in the fall to restore ruts that are deeper than the allowed eight inches. Such restoration is best done in the fall, Hahn explained, because the ground is drier.

"The Forestry Department said it would do more harm than good if they did it now, that it would just stir a lot of things up," Hahn said. If Green does not restore the damaged land, "we'll have to take action against the property owner," he added. The site is owned by a trust for Louise Hedrick, who is in a nursing home.

Green may also be cited by the Forestry Department for operating heavy equipment up to stream banks and leaving debris in streams on a 60-acre tract on the Gloucester side of Dragon Run, almost across from the Middlesex site. Nelson Jarvis, chief forest warden for Gloucester, said he may obtain a warrant for the logger if he doesn't remove the debris.

Hersey Mason Jr., who owns the

Gloucester tract, said he plans to reforest the site, "like I do all the land I timber." Mason said he sold the timber rights to Flippo Lumber Co. of Doswell, which subcontracted with Green.

Matt Poirot, state forest engineer for eastern Virginia, said the family-owned Green company moves from job to job and isn't easy to track down. He said he believes Green has two crews now working on separate tracts in Hanover and Essex counties.

R.L. Green, the 75-year-old company patriarch, lives in Caroline County, Poirot said. Although the company has a Hanover post office box mailing address, it has no telephone listing there. Attempts to reach Green for comment have been unsuccessful.

Poirot said since the Forestry Department was given enforcement authority over logging operations two years ago, Green has been cited twice for violations in King William County, and has had one stop-work order issued against him on a job in Goochland County before last month's stop-work order in Gloucester.

"He's probably been the one in my area I've had more dealings with than anyone else," said Poirot. He added that Green "usually fixes problems" when they're pointed out.

Attachment B

TERMS FOR AGREEMENT

between

FRIENDS OF DRAGON RUN (FODR)

and

MIDDLE PENINSULA PLANNING DISTRICT COMMISSION (MPPDC)

Subject: Purchase and Management of the 5.9 Acre Property on Rt. 603 at New Dragon Bridge in Middlesex County with Utilization of Grant Aid from the Virginia Coastal Resources Management Program.

Purchase and Improvements: 1-5

1. Friends of Dragon Run agrees to purchase and hold title to subject property.
2. The Virginia Coastal Resources Management Program Grant, hereinafter referred to as the Grant; is to provide 50% of the appraised value as part of the purchase price.
3. The costs of closing, surveying and legal service are to be partially covered by \$500 from the Grant, the balance to be paid by Friends of Dragon Run.
4. Immediate improvements are to be made to stabilize the launching ramp slope and the parking area for all weather use, costs not to exceed \$1,500 of which the first \$891 is to be provided by the Grant.
5. The labor and travel expenses for improvements are to be provided by volunteers from Friends of Dragon Run to achieve up to a value of \$2,062 in matching funds as provided in the Grant.

Lease Agreement: 6-11

6. FODR agrees to enter into a lease agreement with the MPPDC on at least two acres of the property, including part of the Dragon Run frontage, the parking area and the launching access site. This lease would preclude its development for any use not in the interest of the protection and conservation of the waterway and its environs.

PROPOSAL FOR AGREEMENT/MPPDC

7. The lease would be drawn for a period of 25 years, but could be terminated for convenience with three months notice by either party. Lease payments would be nominal (\$1.00 year)?
8. The MPPDC is to provide FODR a Certificate of Insurance confirming liability coverage for this site by public use. The aggregate amount should be no less than \$1,500,000.
9. FODR will provide an acceptable title opinion or title insurance to MPPDC for its Grant documentation.
10. FODR will provide an appraisal of the property acceptable to MPPDC and its Grant authority.
11. FODR will provide to MPPDC a map and description of the property.

Access Management: 12-15

12. Understanding that access to Dragon Run at this property has long been enjoyed by the public, but that, to date, the volume and type of traffic has been relatively harmless to the waterway and its environs. It is mutually agreed that, for the time being and immediate future, this volume of access can be continued and managed using only signs and an honor system to assure reasonable care of the waterway, its environs and the access site. As lessee, MPPDC would be responsible for day to day management of the access site and execution of the management policy, e.g. permit issuance, volume control, user fee collection, etc.
13. In the more distant future, however, should the volume of traffic or abuse of the honor system become a liability to the waterway, its adjacent land or the access site, then it is mutually agreed that a more active system of management would be necessary. Such active management might include, but not be limited to: parking and launching by permit only, locked access requiring a key or combination, a limit on the number of persons and/or watercraft launched in a given time period, user fees to cover administrative and maintenance costs, a responsible party for each permitted use, waiver of liability or proof of insurance.

PROPOSAL FOR AGREEMENT/MPPDC

14. The management policy of the leased access site would be controlled by a four member policy board to be made up of two members each selected by MPPDC and FODR. The policy board will be an associate committee to the Dragon Run Steering Committee. The policy board would meet annually to review and if necessary, amend the policy and at any other time for the same purpose upon the request of at least two members of the board giving reasonable notice. Any unreconciled disputes shall be arbitrated by an hoc committee of three persons, one each selected by the MPPDC and FODR, and the third agreed upon by both the MPPDC and FODR.
15. It is agreed that long term maintenance due to customary wear and tear of use should be the shared responsibility of the MPPDC and FODR. FODR will agree to provide volunteer time as an in kind match when required to match MPPDC finance grants for site maintenance/improvement during the period of the lease (25 years). The specific FODR commitment will be for quarterly site cleanups and a once-a-year work day.

Public Access: 16

16. FODR will grant in the lease agreement a managed public access subject to the access plan discussed above for the term of 25 years. The FODR will provide deeded easement of 2 acres for public access.

Duration of Agreement: 17-20

17. Friends of Dragon Run, as a non-profit conservation organization, is to make provision for the ownership of subject property to pass to another non-profit organization if Friends of Dragon Run should cease to exist; e.g., Chesapeake Bay Foundation or Virginia Nature Conservancy.
18. The MPPDC will rely on grant grant funding and FODR volunteer labor to provide maintenance of public access site. Should either grant funding or volunteer labor be unavailable, the MPPDC may terminate the lease agreement.
19. The contemplated Lease Agreement with MPPDC may be transferable with the consent of FODR. The County of Middlesex will be offered the right of first refusal to accept the transferred lease on the property.
20. This lease may be amended with mutual consent of Lessee and Lessor whenever required.

PROPOSAL FOR AGREEMENT/MPPDC

AGREED TO THIS _____ DAY OF _____, 1995

MIDDLE PENINSULA PLANNING
DISTRICT COMMISSION

Witness:

By: _____

Title: _____

FRIENDS OF DRAGON RUN

Witness:

By: _____

Title: _____

NEW DRAGON BRIDGE SITE MAINTENANCE PLAN

Background: The public access management of two acres of land adjacent to the New Dragon Bridge, Route 603, Middlesex County on the Dragon Run stream will require periodic maintenance to provide a safe and attractive location for public use. The site design will allow for minimum structural and labor input on an annual basis.

Site Design: Key to minimizing annual maintenance costs will be the initial design of the site. The basic elements include gravel parking for 6 vehicles, stabilization of approximately 12 feet of hillside (5 feet of elevation), gravel path from parking lot to stream side, 2 trash receptacles, and one small sign (2'x4'). These initial design improvements will be funded by the acquisition grant.

Partners in Management: The Middle Peninsula Planning District Commission will be the lead agency responsible for the New Dragon Bridge Access Site Management and Maintenance. Key to this responsibility is the partnership with the Friends of the Dragon Run, owners of the site; and the Virginia Coastal Resources Management Program, funding the acquisition and annual maintenance costs.

The Friends of the Dragon Run will provide for volunteer labor for site cleanups at least on a quarterly basis. The Friends of the Dragon Run will also provide volunteers for specific light physical maintenance on an annual basis (ie annual work day).

Ongoing regular maintenance, such as trash removal, and major-labor or equipment intensive repairs and materials will be managed by the MPPDC through grant funds provided from the Virginia Coastal Resources Management Program (VCRMP). Presently, the VCRMP awards the MPPDC a basic Coastal Management grant of \$20,000 per year, in addition, the VCRMP has provided three years of project funding for the Dragon Run Management Program, totaling \$74,500. VCRMP has also awarded the \$15,000 for the public access project at New Dragon Bridge. Program managers at VCRMP have expressed a continued interest in supporting the MPPDC in the integrated Watershed Management of the Dragon Run.

The Friends of the Dragon Run and the VCRMP are considered the primary support to the MPPDC maintenance of the access site. Other organizations and funding sources will be sought from time-to-time to provide special projects for the site. Such funding sources may include the Virginia Department of Game and Inland Fisheries and the Virginia Department of Conservation and Recreation. Volunteer organizations such as civic clubs, scouts, and youth groups may be utilized on specific projects designed for such groups.

New Dragon Bridge Site Maintenance Plan (continued)

Page 2

A volunteer water quality monitor presently visits the site to collect and analyze water samples on a weekly basis. Friends of the Dragon Run members also visit the site on a frequent basis. These individuals can monitor the site on a regular basis and contact the MPPDC if problems are observed.

MPPDC Maintenance Activities:

The MPPDC staff will be responsible for trash receptacle emptying, general site cleanup, and site observation on a regular basis. The staff will schedule a bi-weekly visit to the site, which may be altered based on seasonal use (e.g. one per week during high use, once every four weeks in low use periods).

Annual Cost Estimate:

<u>Personnel</u>	<u>Formula</u>	<u>Man hours/yr.</u>	<u>Rate/hr*</u>	<u>MPPDC Total</u>	<u>Match Total</u>
MPPDC Staff	(1x2x12)	24 hours	\$30	\$ 720	
FODR Volunteers	(10x6x4)	240 hours	\$ 5		\$1200

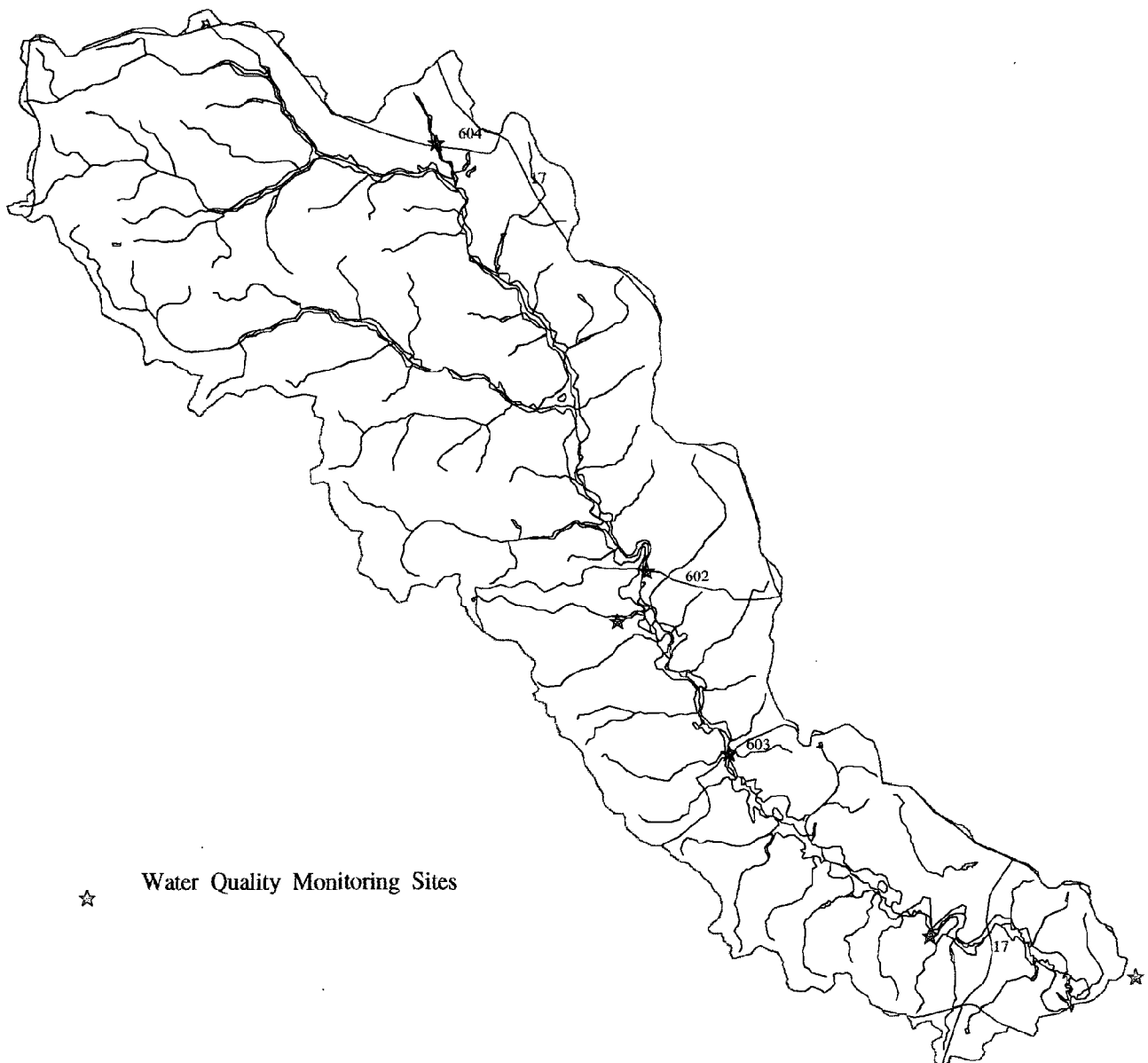
Materials

One Load Crush and Run gravel per year	\$ 150	
One Replacement Trash Receptacle per year	100	
Trash bags	30	
Miscellaneous	200	
	<u>\$1200</u>	\$1200

*Note: MPPDC staff rate include salary, fringe and indirect costs
FODR unpaid volunteers rate of \$5/hr used for match fund purposes.

Attachment D

Dragon Run Watershed



LAND USE ANALYSIS REPORT

DRAGON RUN WATERSHED MANAGEMENT PROJECT

Land Cover Classification/Land Use Report

Background

The Dragon Run is a forty-mile stream characterized by extensive non-tidal cypress swamp. The Watershed consists of 140 square miles, of which 10% are wetlands. The watershed is largely undeveloped and is recognized by the Smithsonian Institute as Virginia's most pristine waterbody to the Chesapeake Bay. The Dragon Run Watershed is located in the Counties of Essex, Gloucester, King and Queen, and Middlesex.

General Characteristics

Total Area 140.2 square miles
Area within Middle Peninsula 140.2 square miles

<u>Locality</u>	<u>Watershed Area(sq.miles)</u>	<u>% Watershed</u>	<u>%Locality</u>
Essex	28.9	21	17
Gloucester	8.9	6	3
King and Queen	72.3	52	16
Middlesex	30.0	21	22

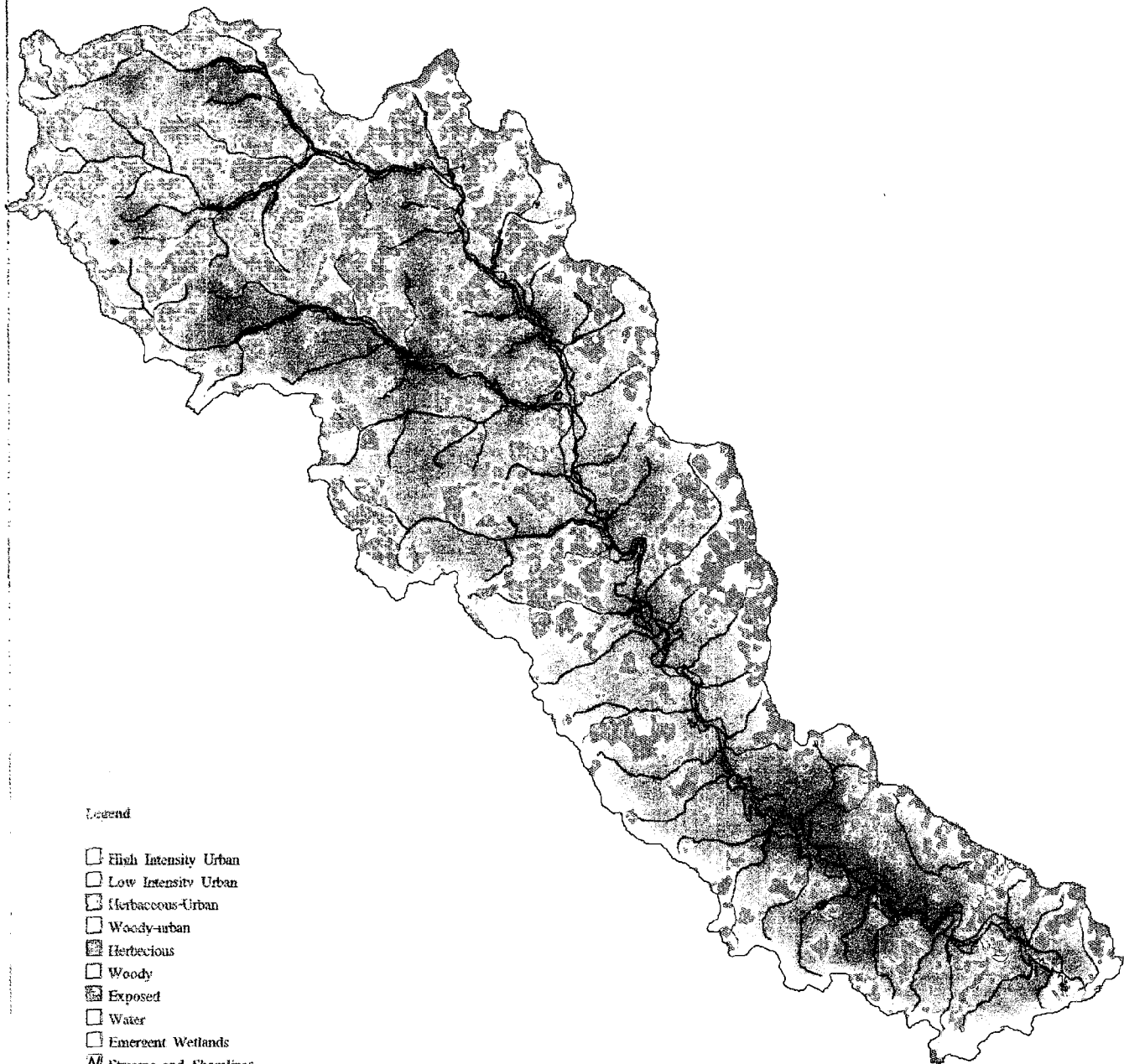
Land Cover Classification

<u>Land Class</u>	<u>Square Miles</u>
High Intensity-Urban	0
Low Intensity-Urban	0.52
Herbacious-Urban	0.33
Woody-Urban	0.12
Herbacious (Field)	39.41
Woody (Forest)	99.25
Exposed (Bare)	0
Water	0.13
Emergent Wetlands	0.53
Total Land	140.17

% Undeveloped Lands: 99.3

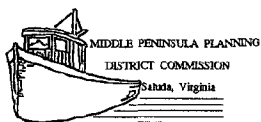
Dragon Run Watershed Management Plan

Land Cover Classification



Legend

- ☐ High Intensity Urban
- ☐ Low Intensity Urban
- ☐ Herbaceous-Urban
- ☐ Woody-urban
- ☐ Herbaceous
- ☐ Woody
- ☐ Exposed
- ☐ Water
- ☐ Emergent Wetlands
- ☒ Streams and Shorelines



This map production was funded, in part, by the Department of Environmental Quality's Coastal Resources Management Program through Grant # NA47020287-01 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, under the Coastal Zone Management Act of 1972, as amended.

The Dragon Run Watershed is relatively undeveloped as compared to other Middle Peninsula watersheds. The percent undeveloped land (99.3%) is third among the region's 21 watersheds as delineated by the state Departments of Conservation and Recreation and Environmental Quality. Forest lands comprise of 71% of the watershed and field and farm lands make up 28% of the area.

The primary activities impacting the watershed from forest lands is the harvesting of timber which may contribute to sedimentation if BMPs are not employed. Timber harvest also alters wildlife habitat, however, disturbance may be temporary, as undergrowth and the development of a new stand of trees may simulate a natural forest succession process.

Farm lands in use without BMP measures may potentially contribute to water quality degradation through nutrient enrichment from fertilizer and animal wastes runoff. While the Dragon Run appears to develop significant oxygen depletion during the summer, this is more likely due to decay of swamp biomass than to algal blooms resulting from nutrient enrichment.

Urbanization and suburbanization of rural areas are major concerns in the Middle Peninsula region. The Dragon Run watershed has seen some commercial growth along the Route 17 corridor near Saluda, primarily a fast food and a grocery store, with more retail stores proposed. There also exists the potential for the conversion of farm lands to residential development as farming becomes less viable economically.

Future Land Uses

Essex: The Essex County Comprehensive Plan (1991) Land Use Plan shows the entire County portion of the Dragon Run Watershed to be designated as "Countryside District" which is intended to limit development below a level requiring substantial county services. Subdivision would be limited to one acre per five acres owned.

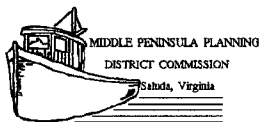
Gloucester: The 1991 Gloucester Land Use Plan shows the majority of Dragon Run Watershed here as a "Rural Countryside District" with a "Rural Service Center" located at Glenss. The Rural Countryside District is intended to primarily maintain farmlands and woodlands. The Rural Service Center District is designed to provide for limited commercial and industrial needs of rural areas with some residential development.

King and Queen: The 1994 Comprehensive Land Use Plan show the entire Dragon Run Watershed here as a "Rural Development Area" whose components are forests, agriculture, rural residential, small subdivisions, and rural village centers.

Middlesex: The Future Land Use Map of the 1994 Plan shows the majority of the Watershed as rural-open space. The area around Saluda and along Route 17 near Saluda are shown as areas for Commercial and Light Industrial growth, including the development of water and sewer utilities.

Dragon Run Watershed Management Plan

Middle Peninsula Watersheds



This map production was funded, in part, by the Department of Environmental Quality's Coastal Resources Management Program through Grant # NA47020287-01 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, under the Coastal Zone Management Act of 1972, as amended."

Floodplain Area: 21.17 square miles

% Floodplain: 15.0

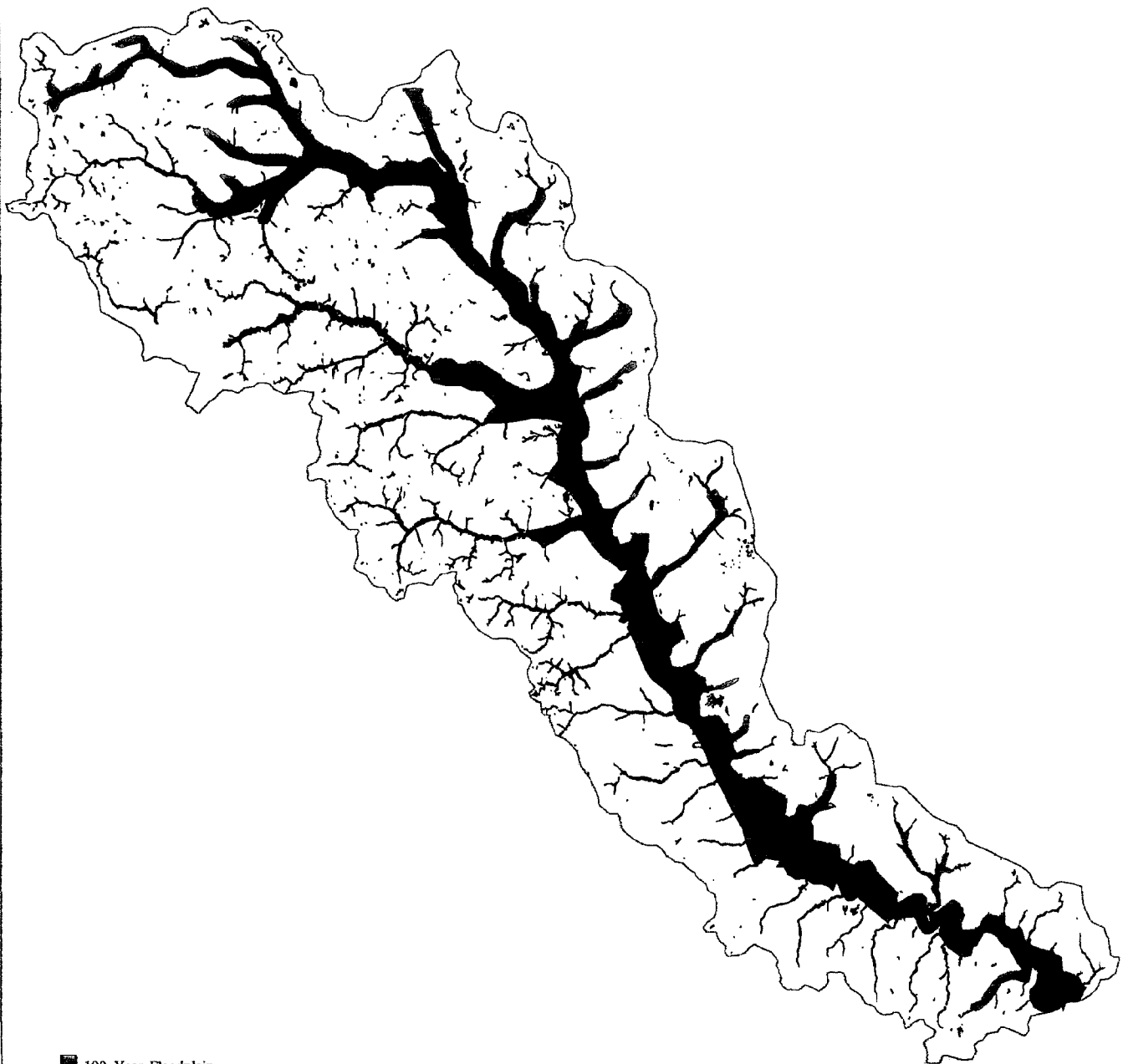
NWI WETLANDS CLASSIFICATIONS

CLASS	AREA (SQMI)
LIUB	0.10
PEM	0.72
PFO	10.9
PSS	2.49
PUB	0.56
RIUB	0.06
TOTAL	14.83

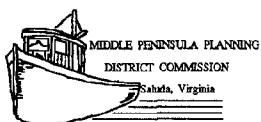
% Wetlands: 10.6

Dragon Run Watershed Management Plan

Floodplain and Wetlands



- 100 Year Floodplain
- Wetlands



This map production was funded, in part, by the Department of Environmental Quality's Coastal Resources Management Program through Grant # NA47020287-01 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, under the Coastal Zone Management Act of 1972, as amended."

Public Access Areas

SITENAME	ROADNO	PARKING
Wares Bridge	Rt. 602	9
New Dragon Bridge	Rt. 604	9

Sites/100sq.mi.: 1.4

Natural Heritage Species

<u>Type</u>	<u>GlobalRank</u>	<u>StateRank</u>	<u>Federal</u>
Natural Community			
Vascular Plant	G3G4	S2	
Vascular Plant	G4	S2	
Vascular Plant	G3	S2S3	3C

Species/10 sq.mi.: 0.3

Natural Heritage Sites: None

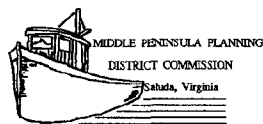
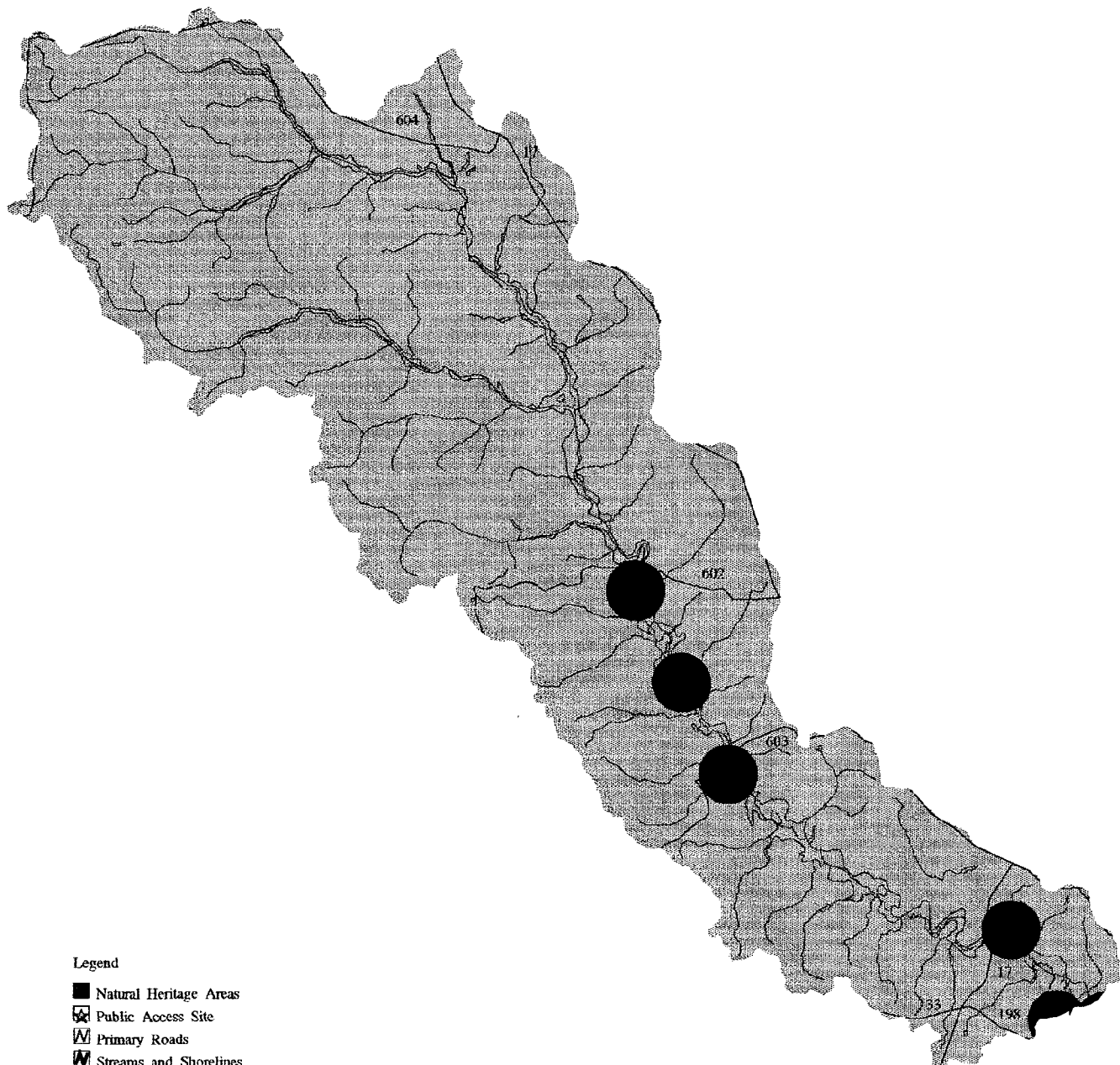
Smithsonian Rank

The Smithsonian Institute ranked the Dragon Run as the second highest priority waterbody in the Chesapeake Bay region for ecological significance. This was the highest ranked Virginia waterbody.

State Critical Areas: 1st of 8 for the Middle Peninsula

Dragon Run Watershed Management Plan

Public Access and Natural Heritage Areas



This map production was funded, in part, by the Department of Environmental Quality's Coastal Resources Management Program through Grant # NA47020287-01 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, under the Coastal Zone Management Act of 1972, as amended."

VPDES Permits

VANUM	OWNER	OUTFALL
VA0075302	Miller's Square Subdiv. WTP	001
VA0083011	Pitts Lumber Company Inc.	001
VA0028461	Rappahannock Community College	001

Closed Shellfishing Waters

The Dragon Run is Freshwater, but is technically closed to shellfish harvesting.

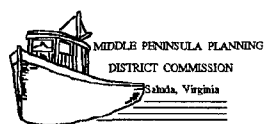
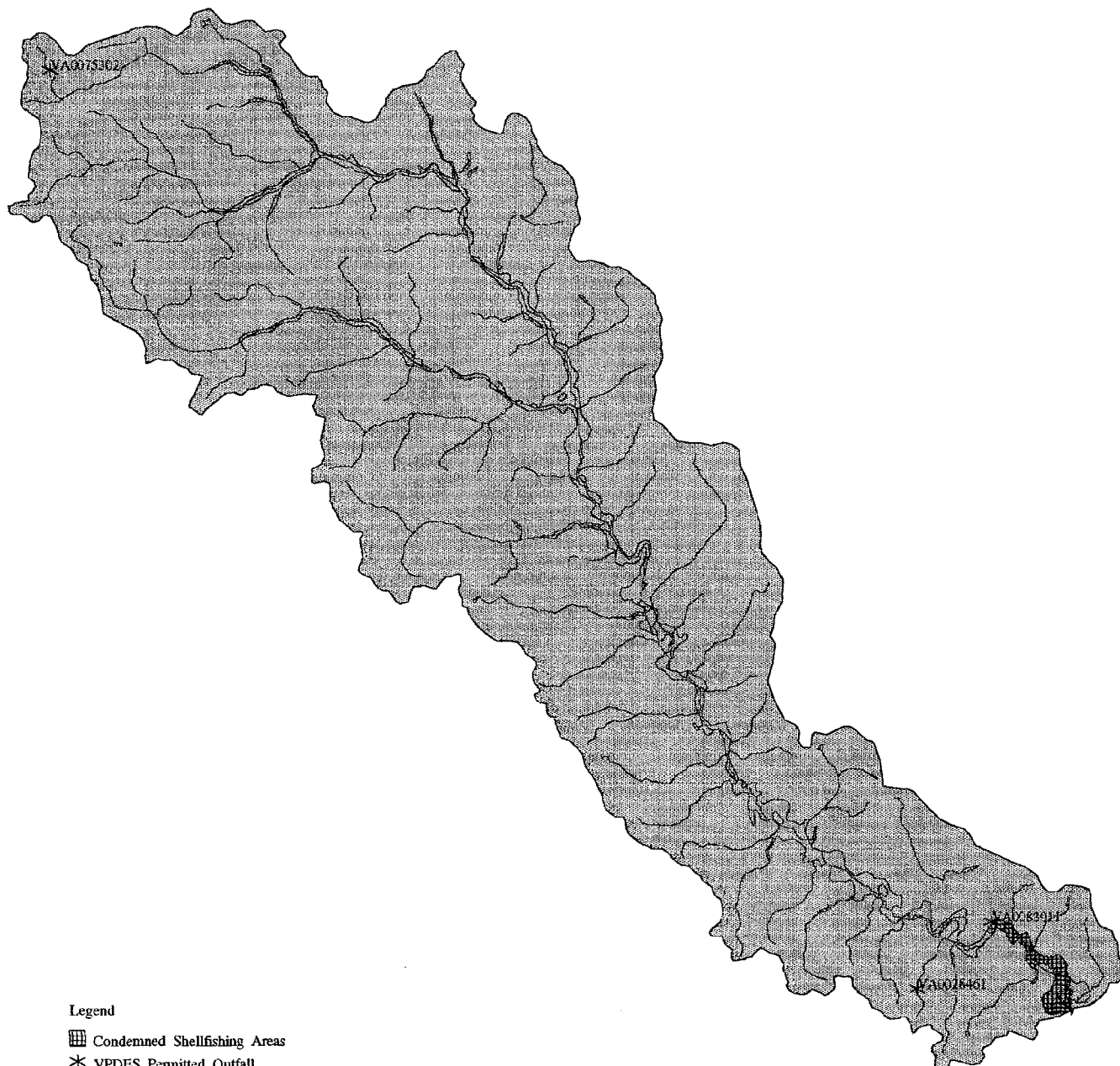
Citation Fisheries: Dragon Run

Freshwater 1984-1994 60 Total/6 Species

Predominate Species Caught: Yellow Perch

Dragon Run Watershed Management Plan

VPDES Permit Locations & Closed Shellfishing Waters

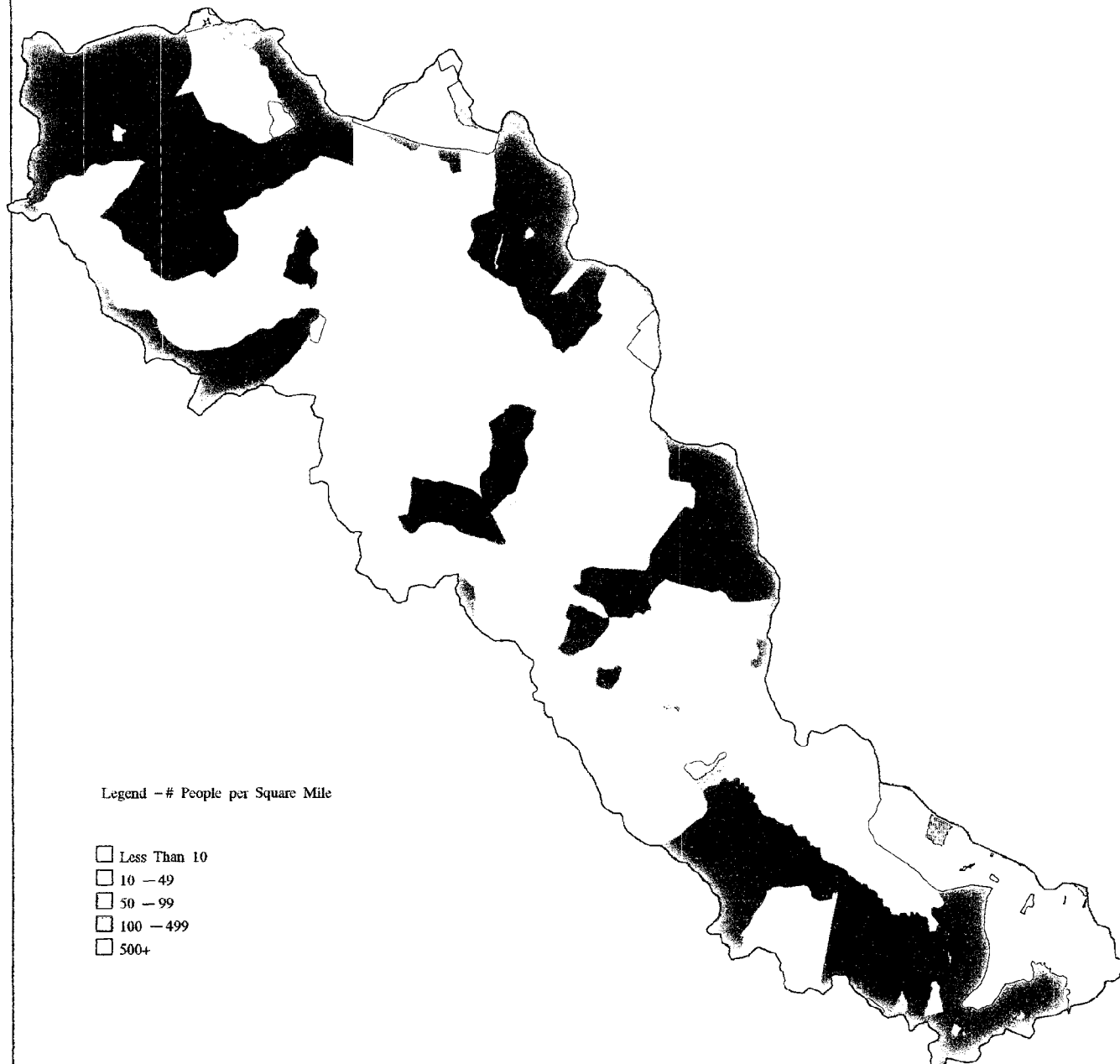


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Comprehensive Plan - % Development Zones: 3.6

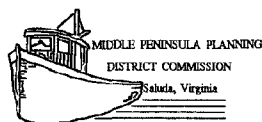
Dragon Run Watershed Management Plan

Population Density



Legend - # People per Square Mile

- ☐ Less Than 10
- ☐ 10 - 49
- ☐ 50 - 99
- ☐ 100 - 499
- ☐ 500+



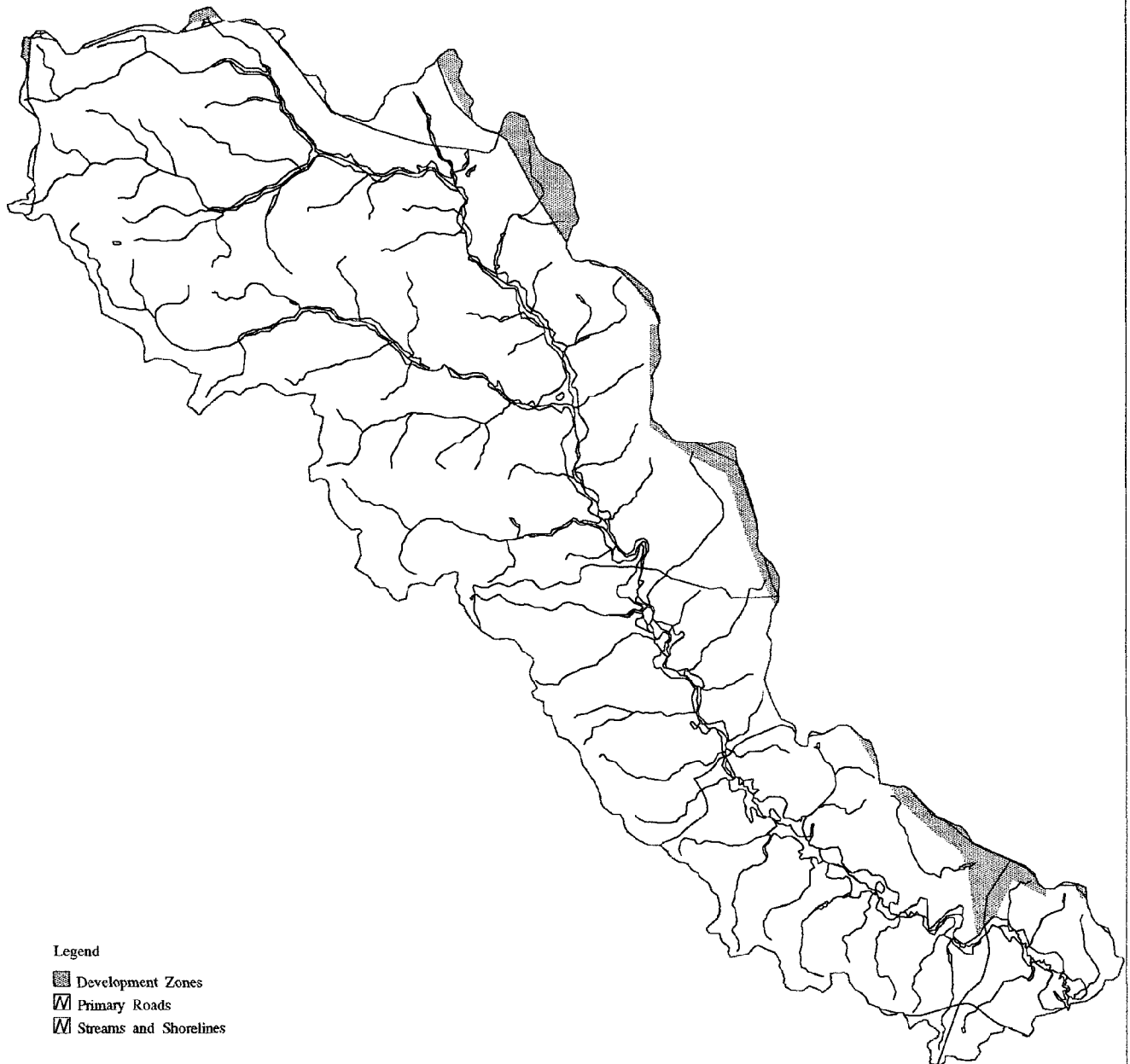
This map production was funded, in part, by the Department of Environmental Quality's Coastal Resources Management Program through Grant # NA470z0287-01 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, under the Coastal Zone Management Act of 1972, as amended."

Population Density: 65.0 People/sq.mi.




Dragon Run Watershed Management Plan

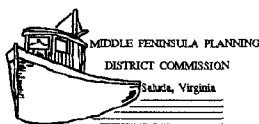
Generalized Future Land Use

Based On Local Comprehensive Plans



Legend

-  Development Zones
-  Primary Roads
-  Streams and Shorelines



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